June 16, light frosts occurred in exposed localities in the lower Lake region, and the northern part of the Middle Atlantic States on the 12th and 13th. Light frosts occurred on the cranberry bogs of New Jersey on the 13th.

Tornadoes occurred in Illinois, Indiana, and Kentucky on the 7th, and in Kansas on the 23d.

Thunderstorms were unusually numerous in Iowa, Nebraska, South Dakota, and Maryland on the 24th, and in New England on the 25th and 26th. Heavy rains fell in Tennessee on the 7th and 8th, and in Montana from the 20th to the 23d.

The weather in the British Isles was for the most part controlled by depressions moving in from the Atlantic, of which there was almost a constant procession during the first half of the month. The temperature was below the normal and there was considerable rain. High pressure prevailed in Iceland until the 6th; after that date the barometer was relatively low, under the influence of the depressions which moved northeastward over the British Isles.

Pressure was continuously high at the Azores with the exception of the 7th to 10th.

BOSTON FORECAST DISTRICT.

The first half of the month was unseasonably cold, with much cloudy and unsettled weather. The conditions changed on the 18th, and during the remainder of the month the weather was quite pleasant, with the daily temperatures generally above the monthly average. The mean temperature of the month, entire district, 62.2°, is 2.5° below the normal, and with the exception of 61.3° in 1902 and 59.5° in 1904, is the lowest for June during the last ten years. The precipitation was nearly normal. It was, however, unevenly distributed. The least rainfall was in Rhode Island and the greatest in Connecticut and in Maine. There were no severe windstorms during the month. Storm warnings were displayed on the 1st and on the 30th. Shipping experienced considerable delay and inconvenience from fog during the first half of the month.—*J. W. Smith, District Forecaster.*

NEW ORLEANS FORECAST DISTRICT.

No special warnings were issued. There was no general storm along the Gulf coast during the month. Temperature conditions were moderate. The rainfall was deficient over the greater portion of the district.—*I. M. Cline, District Forecaster.*

LOUISVILLE FORECAST DISTRICT.

The month as a whole was cool; over a large portion of the western half of the district it was also dry. The rainfall at Louisville was the least for any June during the last thirty-six years. In the eastern half of the district, however, the monthly rainfall was normal, and in many places considerably in excess, altho mostly made up of a few heavy thundershowers. A number of damaging rains and one or two cloud-bursts occurred locally in Kentucky the first part of the month. The most damaging of these occurred the night of the 7–8th, when the town of Gradyville was practically wiped out of existence and 21 lives lost, due to a cloud-burst flooding Big Creek suddenly and sweeping away houses and people before the inhabitants became aware of the danger.

There were one or two quite cool periods but no frosts; also no unusually high temperatures occurred.—*F. J. Walz, District Forecaster.*

CHICAGO FORECAST DISTRICT.

Storms of moderate intensity visited the upper lakes on the 1st, 4–5th, 10–11th, and 30th. Lake interests were forewarned regarding these storms, and no marine casualties due to stress of weather have been reported.

Following the occurrence of frost in the Northwestern States on the 5th, temperatures did not exhibit notable features. Rainfalls were rather frequent and usually occurred in connection with thunderstorms.—*E. B. Garriott, Professor of Meteorology.*

DENVER FORECAST DISTRICT.

No special warnings were issued. The month was cool thruout the district, the deficiency in temperature being marked in New Mexico, western Colorado, and Utah. Several light frosts were noted in western Utah, and light to killing frosts at stations of high altitude. Rainfall was distributed irregularly, less than the normal occurring in sontheastern Wyoming, central Colorado, and in Arizona, and an excess in the remainder of the district. Dry weather in the central mountain region, and especially the prevailing low temperatures acted as a check on the melting of the snow; and instead of the snow-fed streams reaching unusually high stages, as might reasonably have been expected from the amount of snow on the upper drainage basins, the melting was relatively gradual. While high stages were general from the middle of June, the usual time of the maximum flow, the stages reached were not destructive. At the close of the month the highest point had not been attained in the upper reaches of many of the streams rising near the Continental Divide.—*F. H. Brandenburg, District Forecaster.*

SAN FRANCISCO FORECAST DISTRICT.

The month was abnormal in the matter of rainfall, but about normal in temperature. At San Francisco the rainfall amounted to 1.28 inches, which is, with one exception, the largest June rainfall shown in a record covering fifty-seven years. In June, 1884, conditions were somewhat similar to those of the present year. The month began with unsettled weather in the northern portion of the State and there were frequent thunderstorms in the mountains. The pressure continued low over the Pacific slope for the first six days. The rain area seemed to move slowly southward and eastward, clear weather prevailing after the 8th. There was a return of the unsettled conditions on the 11th, and light rains were general in California and Nevada until the 15th. There was a heavy snowfall in the Sierra on June 11 and the amount on the ground at Summit was increased from 48 to 59 inches. The latter half of the month was more normal altho there were thunderstorms in the north on June 21 and 22.

There were no frost nor storm warnings issued during the month.—*A. G. McAdie, Professor and Forecast Official.*

PORTLAND, OREG., FORECAST DISTRICT.

There was but one storm of note during the month and it made its appearance off the Washington coast the evening of the 9th, and moved slowly northeastward. The disturbance caused general rains in this district for two days and unusually high winds for the season. Timely warnings were issued for the storm and no damage of consequence resulted therefrom. Light frost occurred in the interior of the district on several nights for which warnings were issued the previous morning.

The S. S. *President* sent this office the first wireless weather report ever received in this district at 10 p. m., June 18, 1907. The observation was taken in latitude 52° north and longitude 142° west, which is about 1100 miles northwest of Portland, Oreg.

The annual rise in the Columbia River was featureless. The river rose at Vancouver, Wash., from 18.5 feet on the 1st to 20.1 feet on the 10th. It then fell slowly and reached a stage of 17.3 feet at the end of the month. It is still above the flood stage at Vancouver, Wash., and Portland, Oreg.—*E. A. Beals, District Forecaster.*

## RIVERS AND FLOODS.

The floods of the month were more or less local in character. In no instance was the stage of water abnormally high, and nowhere were the losses and damage of great amount, except in western Montana and that portion of the Red River watershed lying in northwestern Louisiana above Shreveport and

in southwestern Arkansas. The floods in western Montana were caused by heavy rains that fell from June 20 to 23, inclusive, and much damage was done to growing crops, railroads, and bridges. The Red River flood was due to heavy rains over the upper watershed between May 24 and 31, Arthur City, Tex., reporting a fall of 7.20 inches on May 31. The highest stage reached at Fulton, Ark., was 31.5 feet, 3.5 feet above the flood stage, on June 4, and that at Shreveport, La., 26.9 feet, 2.1 feet below the flood stage, on June 13. The first warning, issued on May 27, was to the effect that a stage of 30 feet was probable at Fulton in about five days, and all interested were advised to take steps to protect their property. Supplementary warnings were issued on May 28 and June 2. The failure of the river to reach the flood stage at Shreveport was doubtless due to the comparatively dry condition of the bayous, lakes, and the low country between Fulton and Shreveport, as well as to some breaks in the new levees in the State of Arkansas, south of Fulton.

The losses in crops, principally cotton, are estimated at over $500,000, of which about three-fourths were in Arkansas, and one-fourth in Louisiana north of Shreveport. No levee breaks were reported in Louisiana, but much damage was inevitable as thousand of acres of unprotected lowlands in Louisiana are cultivated. There was no loss of live stock, a very important matter in this section, as the warnings gave all ample time in which to remove all portable property.

The next floods in point of importance were those in some of the Texas rivers. Flood stages were general except in the Brazos and upper Colorado, and considerable damage was done to crops, bridges, etc. Warnings were promptly issued for these floods, and they were highly commended by all interested, especially by those residing along the Trinity River where the floods were most pronounced and persistent.

Heavy rains on June 1 caused a moderate flood in the James River east of Scottsville, Va., for which warnings were issued on June 2. Some docks at Richmond were covered for a time, a few cellars filled, and some meadow lands overflowed, but, aside from the inconvenience, no damage was done, as all movable property had been placed beyond reach of the water. The highest stage reached at Richmond was 14.7 feet, 2.7 feet above the flood stage, on June 3. Another flood of still more moderate character occurred on June 15 and 16 as a result of heavy rains on June 13 over the upper watershed of the James River. The usual warnings were issued, the usual conditions were experienced, and no damage was done.

There were also short floods of a minor character in the lower Roanoke, the Wateree, Santee, lower Wabash, and the Missouri River east of Kansas City, for which warnings were issued at the proper times. The annual rise of the Columbia River ended with a stage of 34.1 feet, 5.9 feet below the flood stage, at The Dalles, Oreg., on June 5, and with a stage of 20 feet, 6 feet above the flood stage, at Vancouver, Wash., from June 5 to 7 and 9 to 11, all inclusive. The highest stage reached at Portland, Oreg., on the Willamette River, was 19.2 feet, 4.2 feet above the flood stage, from June 6 to 8, inclusive, and on June 10.

The highest and lowest water, mean stage, and monthly range at 291 river stations are given in Table VI. Hydrographs for typical points on seven principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississipi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Professor of Meteorology.*

## SPECIAL ARTICLES, NOTES, AND EXTRACTS.

### TORNADO AT WILLS POINT, TEXAS, MAY 25, 1907.

[The following items are copied from the Wills Point (Texas) Chronicle, issued May 30, 1907.]

At 6:20 o'clock Saturday evening [May 25] * * * a tornado past over the eastern portion of Wills Point. Everything in its path was literally destroyed, three lives were taken, twelve people injured, and much property damaged on either side of the route traveled by the tornado

This fury of wind formed about two and a half miles south of the town in the Brown pasture. Parties saw it when it seemed to be but little more than an ordinary whirlwind, but as it moved it increased in size and destructiveness.

This infant giant was first seen south of the Brown big barn. It seemed to follow the course of a ravine for some distance west, then turned north, a little east. Several times it seemed to veer in its course. Had it gone due north from its place of formation it would have gone well to the east of the town; had it proceeded upon the course when it first veered to the west it would have mist the town some distance. As it was it past over the eastern portion of Wills Point. * * *

The tornado moved slowly, as if to deliberately destroy everything in its path, but at the same time give the people ample opportunity to escape. This whirling demon was seen long before it reached the town, and, like the picture of some giant hand with the finger pointing ever toward you, it lookt to each person who saw it as if it were coming directly toward him There was a hasty retreat to storm cellars, and to this fact alone is due the marvelous escape of so many people. As the tornado gradually approached, and as its course was known, hundreds of people watched it; the awe-inspiring scene, with its mighty roar and its whirling black top, as tho a hundred furnaces were in blast at one time, can never be forgotten. The air was filled with débris, and those who watched the progress of the storm did so with bated breath, knowing it was leaving death and destruction in its wake, yet they were powerless to aid. * * *

A heavy rain, accompanied by some hail, preceded the storm, but there was no rain during its passage thru the town, and in a short time after it was comparatively clear. * * *

It was at first generally thought that the storm gathered on the Brown ranch, two and a half or three miles south of town, but the observations of a number of people seem to bear out the idea that it originated much farther south At least it was first seen near the homes of Spikes and Wilson, 6 miles south of town. It was in its infancy there. Parties at the Brown barn saw it also when it was quite small, and it was then thought to have originated there. C. J. Simmons, living a mile and a half west of Myrtle Springs, saw it form from his home. [Myrtle Springs is 11 miles southeast of Wills Point.] It appeared to him to be some 6 miles west of his house, and there seemed to him to be two or three smaller ones that finally united. He described it as having the appearance of a small, black cloud of peculiar aspect rising in the air and whirling rapidly. Each time it rose there would be a long tail to it, but in the whirling that would disappear until it made dips, when the tail would again appear. After several dips and rises and the consolidation of several smaller ones it began to move forward. Mr. Simmons and his brother watched it till it past over Wills Point and out of sight beyond. * * *

Where the fury finally expended itself is not known here. Emory [18 miles northeast of Wills Point] was visited by a tornado about the same hour, but it is certain that it was not the same one. * * *

A lace curtain was found about 7 miles north of the town. To the curtain was pinned a post-card that showed it came from one of the houses destroyed in town. * * *